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APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
08/853,292	05/09/97	TOVEY	M 23164-1003

EXAMINER

HM11/0928

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ART UNIT	PAPER NUMBER
1646	5

DATE MAILED: 09/28/98

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

☐ Responsive to communication(s) filed on _____.

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire THREE (3) month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-18 is/are pending in the application.
Of the above, claim(s) _____ is/are withdrawn from consideration.
☐ Claim(s) _____ is/are allowed.
☒ Claim(s) 1-18 is/are rejected.
☐ Claim(s) _____ is/are objected to.
☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
☐ The specification is objected to by the Examiner.
☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been

☒ received.
☐ received in Application No. (Series Code/Serial Number) _____.
☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of Reference Cited, PTO-892
☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 4
☐ Interview Summary, PTO-413
☐ Notice of Draftperson's Patent Drawing Review, PTO-948
☐ Notice of Informal Patent Application, PTO-152

--SEE OFFICE ACTION ON THE FOLLOWING PAGES--

★ U.S. GPO: 1998-404-496/40517

1. Claims 13 and 14 are objected to under 37 C.F.R. § 1.75(b) as being duplicate claims. The claims appear to be identical in scope and content because the only Type II IFN (claim 13) known in the art or described in the disclosure is IFN-γ (claim 14). The limitations of claims 13 and 14 are thus identical. One of the duplicate claims should be canceled or otherwise amended to delimit a different scope of the invention. Applicant's attention is also directed to M.P.E.P. § 706.03(k).

2. Claims 1 and 3-14 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 3-5, and 9-14 are confusing, incomplete, and indefinite because it is not clear whether they are limited to the treatment of 70 kg humans or, alternatively, what amounts of IFN should be administered to subjects other than humans having a mass of 70 kg.

Claims 3-8 are incomplete and indefinite as they lack an unambiguous antecedent for recitation of "the dose of interferon."

Claims 4 and 5 are incomplete and indefinite because there is no standard or antecedent for the "single dose," required to establish the response against which the plurality of "smaller" doses must be compared.

Claim 4 is further incomplete and indefinite because it does not identify the reference dose compared to which the plurality of doses must be "smaller."

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 4, 5, 10, 11, and 15 are rejected under 35 U.S.C. § 102(b) as being anticipated by Cummins (U.S. Patent No. 5,019,382).

Cummins exemplifies the use of orally (oropharyngeally) administered hIFN-α to effectively treat a variety of diseases in humans (col. 12). The IFN was administered in solution at 0.7 IU/lb.; thus for a patient weighing 140 lb., each dose would consist of 100 IU of IFN. The IFN was administered twice daily for periods up to 21 days; in such protocols, then, a total of *ca.*

4200 IU of hIFN-α was administered. The prior art methods and compositions accordingly meet all of the functional and quantitative limitations of the noted claims.

5. Claims 1-8, 10-12, and 15-18 are rejected under 35 U.S.C. § 102(b) as being anticipated by Samo *et al.* (*J. Infect. Dis.*, 1984).

Samo describes the administration of 0.7 - 2.4 $\times$ 10^6 IU/day of recombinant hIFN-αA to humans by intranasal (solution spray) administration, divided into two doses per day, and teaches that such dosages are effective to prevent, attenuate, or treat viral infection (abstract; page 182, col. 1). The prior art dosages appear to meet the limitations of all claims specifying quantitative amounts of IFN. Because the instant specification describes intranasal administration as a suitable means of practicing the invention, the prior art method reasonably appears to meet the limitation of providing "oromucosal contact." The protocol described in the prior art meets the "plurality of doses" limitation of claim 4, and each single administration additionally appears to meet the limitation of claims 3 and 5 because the amount given in each dose appears to meet the quantitative limitations of the claims and to be sufficient for therapeutic efficacy, and each dose would necessarily be administered "continuously" for as long as was necessary to administer it. Finally, the prior art therapeutic compositions appear to meet all of the material and functional limitations of claims 15-18, notwithstanding any intended use or effect recited in the claims.

6. Claims 1-3, 5, and 13-15 are rejected under 35 U.S.C. § 102(b) as being anticipated by Iida *et al.* (*Vaccine*, 1989).

The reference describes the intranasal administration of doses of 10^1-10^3 units of mIFN-γ to mice and teaches that such administration is effective to prevent, attenuate, or treat infection by Sendai Virus (abstract; page 230, col. 2). The largest of these doses appears to meet the limitation of being "about 1500 IU," and the dosage plainly meets the dosage limitations of claim 1 when normalized on a weight-basis. Because the instant specification describes intranasal administration as a suitable means of practicing the invention, the prior art method reasonably appears to meet the limitation of providing "oromucosal contact." The protocol described in the prior art necessarily meets the "single dose" limitation of claim 3, and it additionally appears to meet the limitation of claim 5 because the dose would necessarily be administered "continuously" for as long as was necessary to administer it. Finally, the prior art therapeutic compositions

appear to meet all of the material and functional limitations of claim 15, notwithstanding any intended use or effect recited in the claim.

7. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claim 9 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Iida *et al.* (*Vaccine*, 1989).

Relevant teachings of the reference concerning the administration of IFN-γ are set forth above in connection with the rejection under § 102(b). Additionally, the reference teaches that bot G- and GM-CSF can be administered to mice in a manner which enhances their resistance to Sendai Virus (page 230, col. 2). The reference does not exemplify the administration of IFN-γ and either of the CSF's to the same animal.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to treat a mouse with both IFN-γ and G- or GM-CSF to inhibit or treat Sendai Virus infection because Iida teaches that all of the noted cytokines have beneficial effect. Where a claim is directed to no more than a new combination of old elements, wherein the utility of each of the elements in the prior art was in effecting the same purpose as that of the claimed invention, the combination is *prima facie* obvious. *In re Kerkhoven*, 626 F.2d 846, 205 USPQ 1069 (CCPA, 1980).

9. Claims 1-18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cummins (U.S. Patent No. 5,019,382) in view of either one of Samo *et al.* (*J. Infect. Dis.*, 1984) or Iida *et al.* (*Vaccine*, 1989). This rejection is directed to embodiments not anticipated by the references singly.

Relevant teachings of the reference are noted above in connection with the rejection under § 102(b). Additionally, Cummins teaches that IFNs may be advantageously administered to humans and other mammals by promoting contact of the oral and pharyngeal mucosae with a suitable formulation containing the IFN (abstract and the disclosure generally; see particularly col.

4, lines 37-51). Cummins teaches that its methods are suitable for the administration of α, β, and γ IFNs of "natural" or recombinant origin (col. 3, line 20 *ff.*) and that the IFNs may be administered singly or in combination (col. 4, lines 34-36). Suitable dosage regimens include single-dose and multiple-dose administrations, the latter being given either continuously or in staggered periods over the treatment period (col. 5, lines 40-56). Various formulations suitable for use in the methods of the invention are described (col. 5, line 57 to col. 6, line 34). The disclosure of the reference departs from the broader scope of the instant claims in that Cummins advocates the use of unconventionally low doses of IFN, typically 0.1 to 5 IU/lb./day (abstract), and Cummins does not describe the use of larger doses. Additionally, the reference does not exemplify a single-dose administration or the use of IFN-γ.

The relevant teachings of Samo and Iida are as set forth in the paragraphs above.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to treat a mammal therapeutically or prophylactically for viral disease, using any dosage an IFN to known in the art to be effective for such purpose, as exemplified by all of Cummins, Samo, and Iida, and to administer the IFN by an oropharyngeal route, as described by Cummins, because Cummins teaches that such route is effective in a variety of therapeutic contexts. Although Cummins teaches that substantially lower doses of IFN than are conventionally employed may be used to advantage in such methods, the artisan would nonetheless reasonably consider that higher dosages than those preferred by Cummins would be efficacious based on their widespread use in other parenteral administration regimes known in the art, and Cummins contains no teachings which reasonably indicate that any higher dosage would *not* be efficacious. It would have been obvious to formulate the IFN in a lozenge, syrup, or solution because Cummins teaches that such formulations are advantageously and conveniently employed for oropharyngeal administration. Depending upon the disease to be treated, it would have been obvious to provide the IFN in a single administration, for example as employed in the art to treat shipping fever in cattle, or in multiple doses, as exemplified by Cummins, because Cummins teaches that IFN may be advantageously administered in single or multiple doses. As to any single dose, it would have been obvious to provide the IFN continuously over a period of time by administering it in a lozenge because Cummins teaches that such administration is efficacious. The claimed invention

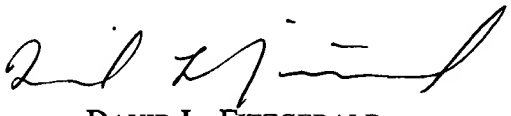
would have been *prima facie* obvious as a whole at the time it was made, especially in the absence of evidence to the contrary.

10. No claim is allowed.

11. Any inquiry concerning this communication should be directed to David Fitzgerald, who can be reached by any of the following means:

Telephone	(703) 308-3934
Fax	
All formal papers	(703) 308-4242
Informal communications	(703) 308-0294
e-mail (note PTO policies below)	david.fitzgerald@uspto.gov

Inquiries of a general nature should be directed to the Technology Center 1 receptionists at (703) 308-0196.



DAVID L. FITZGERALD
PRIMARY EXAMINER
ART UNIT 1646

27 September 1998

Examiner Fitzgerald is generally available weekdays from 8 a.m. to 4 p.m. (Eastern). If he is not available to take a call, a message may be left on his voicemail. Should attempts to reach him be unsuccessful, the interim supervisor for this Art Unit, Lila Feisee, may be reached at (703) 308-2731.

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